AUTODOC CLUB

How to change front suspension strut on **BMW E60** – replacement guide

VIDEO TUTORIAL

Important!

This replacement procedure can be used for:
BMW 5 Saloon (E60) 520i 2.2, BMW 5 Saloon (E60) 530i 3.0, BMW 5 Saloon (E60) 530d 3.0, BMW 5 Saloon (E60) 525i 2.5, BMW 5 Saloon (E60) 545i 4.4, BMW 5 Touring (E61) 525i 2.5, BMW 5 Touring (E61) 545i 4.4, BMW 5 Touring (E61) 530d 3.0, BMW 5 Saloon (E60) 525d 2.5, BMW 5 Touring (E61) 525d 2.5, BMW 5 Saloon (E60) 535d 3.0, BMW 5 Touring (E61) 535d 3.0, BMW 5 Touring (E61) 530i 3.0, BMW 5 Saloon (E60) 523i 2.5, BMW 5 Touring (E61) 523i 2.5, (+ 22)

The steps may slightly vary depending on the car design.

REPLACEMENT: SUSPENSION STRUT – BMW E60.
TOOLS YOU NEED:

- Wire brush
- WD-40 spray
- Brake cleaner
- Copper grease
- Combination spanner #10
- Combination spanner #16
- Combination spanner #18
- Combination spanner #21
- Drive socket # 10
- Drive socket # 13
- Drive socket # 16
- Drive socket # 18
- Drive socket # 21
- Drive socket # 22
- Torx bit T30
- Torx bit T40
- HEX bit no.H6.
- HEX bit no.H7.
- Wheel impact socket #17
- Ratchet wrench
- Torque wrench
- Flat chisel
- Hammer
- Tap wrench
- Clip removal tool
- Phillips screwdriver
- Crow bar
- Ball joint puller
- Hydraulic strut spring compressor
- Hydraulic transmission jack
- Fender cover
- Wheel chock

BUY TOOLS

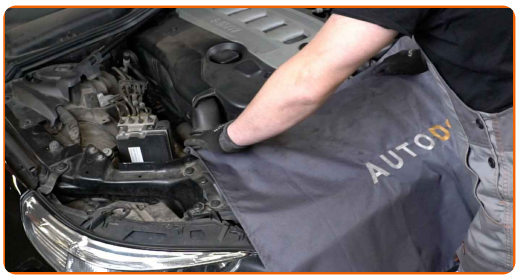
Replacement: suspension strut – BMW E60. Tip from AUTODOC experts:

- Both shock struts of the front suspension should be replaced simultaneously.
- The replacement procedure is identical for the left and right shock struts of the front suspension.
- All work should be done with the engine stopped.

REPLACEMENT: SUSPENSION STRUT – BMW E60. TAKE THE FOLLOWING STEPS:

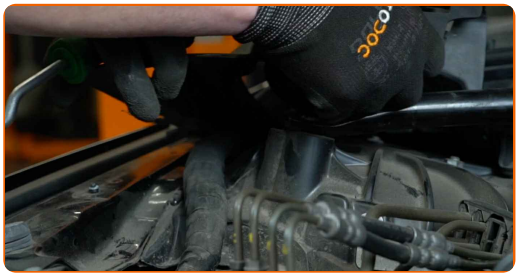
1 Open the bonnet.

2 Use a fender protection cover to prevent damaging paintwork and plastic parts of the car.

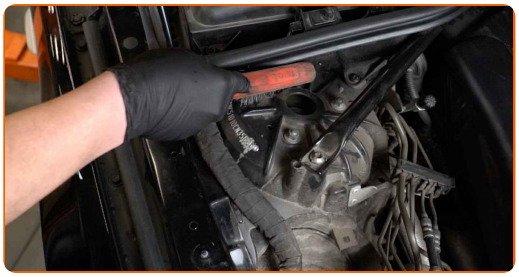


3 Unscrew the fasteners of the suspension strut mount cover. Use a Phillips screwdriver. Use a clip removal tool.

4 Remove the protective cap from the shock absorber strut mount.



5 Clean the fasteners of the shock strut upper mount. Use a wire brush. Use WD-40 spray.

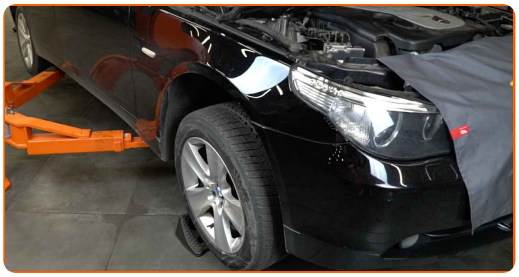


6 Loosen the upper fastener of the shock strut mount. Use a drive socket #13. Use a ratchet wrench.

7 Secure the wheels with chocks.

8 Loosen the wheel mounting bolts. Use wheel impact socket #17.

9 Raise the front of the car and secure on supports.



10 Unscrew the wheel bolts.

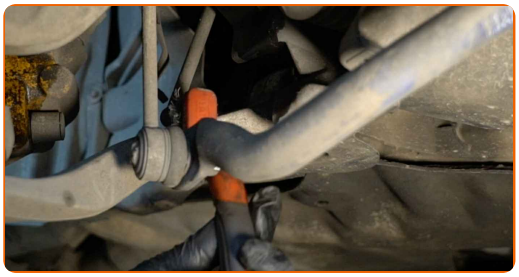
AUTODOC recommends:

- Important! Hold the wheel while unscrewing the fastening bolts. BMW E60

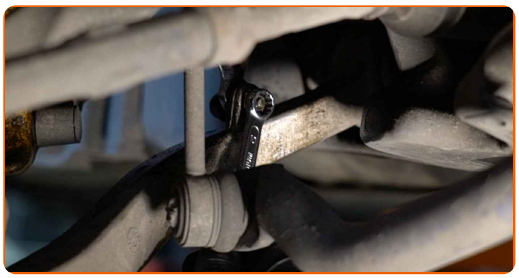
11 Remove the wheel.

12 Disconnect the wiring and the brake hose from the bracket on the shock strut.

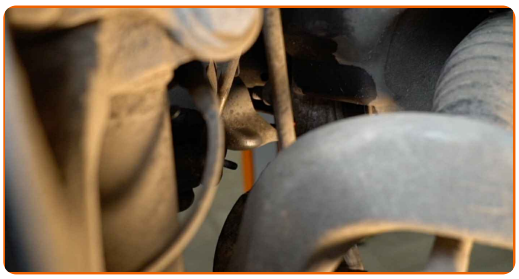
13 Clean the fasteners of the headlight levelling sensor. Use a wire brush. Use WD-40 spray.



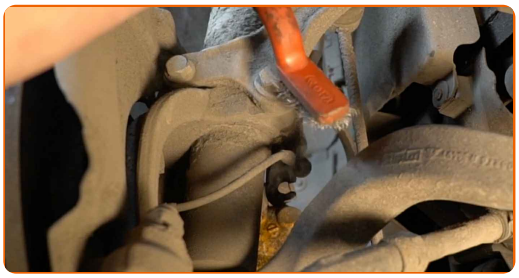
14 Unscrew the fasteners of the headlight levelling sensor. Use a combination spanner #10.



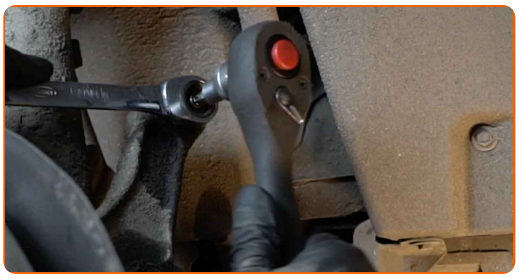
15 Disconnect the headlight levelling sensor.



16 Clean the fasteners connecting the shock strut to the steering knuckle. Clean the stabiliser link fasteners. Use a wire brush. Use WD-40 spray.



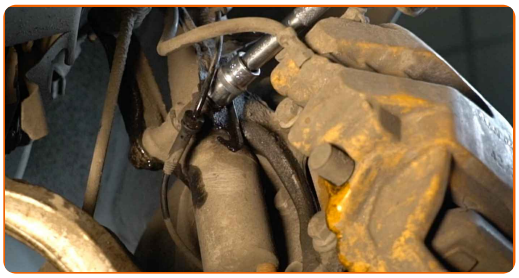
17 Unscrew the fastener connecting the stabilizer link to the shock strut. Use a combination spanner #16. Use Torx T30. Use a ratchet wrench.



18 Remove the stabilizer rod.

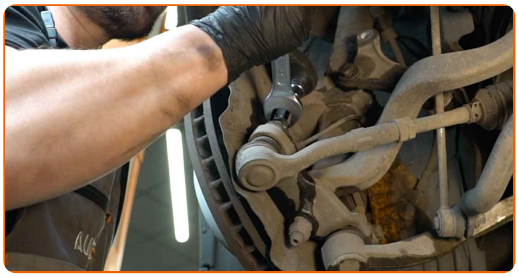
19 Unscrew the fastener of the stabiliser link bracket. Use a drive socket #16. Use a ratchet wrench.

20 Unscrew the lower fastener connecting the shock strut to the steering knuckle. Use a combination spanner #18. Use a drive socket #18. Use a ratchet wrench.



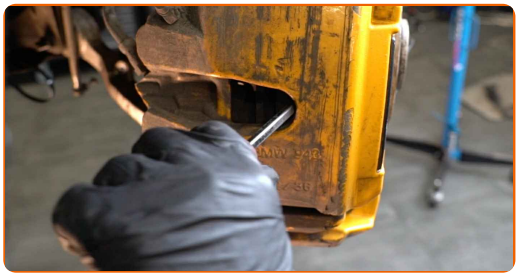
21 Clean the fastener connecting the tie rod end to the steering knuckle. Clean all joints of the arm. Use a wire brush. Use WD-40 spray.

22 Unscrew the end fastening nut to the steering knuckle. Use a combination spanner #21. Use Torx T40. Use a ratchet wrench.

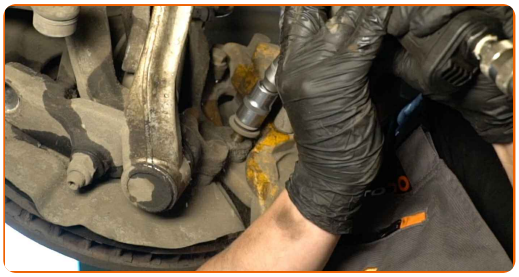


23 Disconnect the tie rod end from the steering knuckle. Use a ball joint puller.

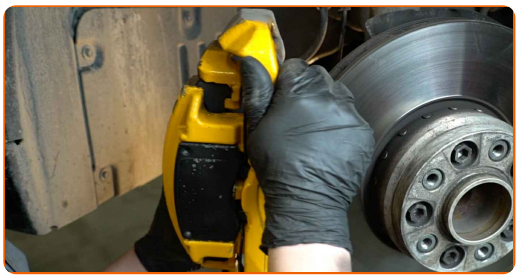
24 Spread the brake pads. Use a crowbar.



25 Unscrew the caliper bracket fastening. Use a drive socket #18. Use a tap wrench.



26 Remove the brake caliper together with its bracket.

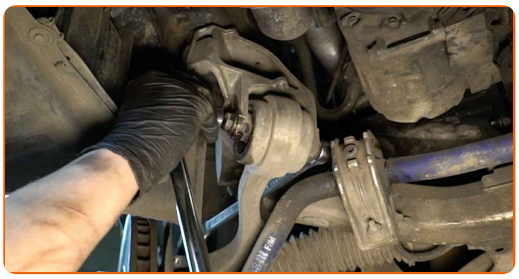


Replacement: suspension strut – BMW E60. AUTODOC recommends:

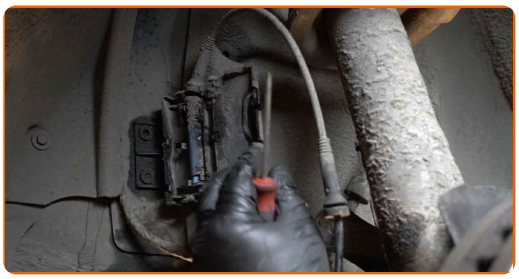
- Tie the caliper to the suspension or to the body with a wire without disconnecting from the brake hose to prevent depressurization of the brake system.
- Make sure that the brake caliper is not hanging on the brake hose.
- Don't press the brake pedal after the brake caliper has been removed. As a result, the piston can fall out from the brake cylinder, and brake fluid leakage and depressurization of the system may occur.

27 Unscrew the rear fastener connecting the control arm to the subframe. Use a combination spanner #18. Use a drive socket #18. Use a ratchet wrench.

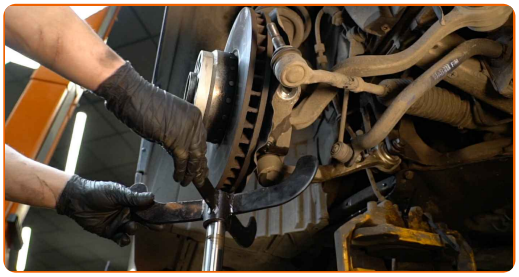
28 Unscrew the front arm fastener. Use a combination spanner #18. Use a drive socket #18. Use a ratchet wrench.



29 Disconnect the ABS sensor wiring.



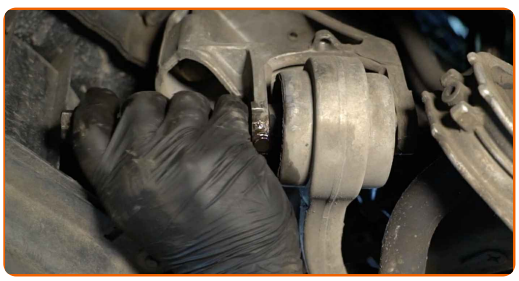
30 Prop up the steering knuckle. Use a hydraulic transmission jack.



31 Remove the rear fastener of the control arm. Use a combination spanner #18.

32 Remove the arm.

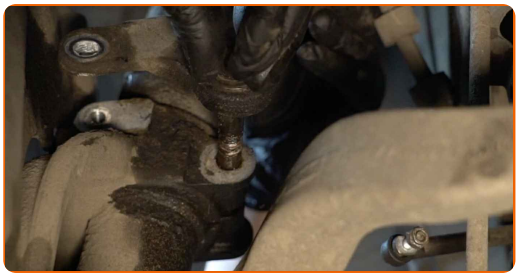
33 Remove the front fastener of the control arm. Use a combination spanner #18.



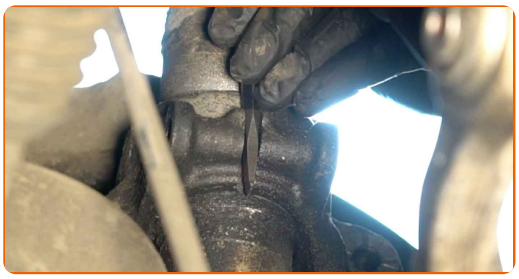
34 Remove the arm.

35 Clean the fasteners connecting the shock strut to the steering knuckle. Use a wire brush. Use WD-40 spray.

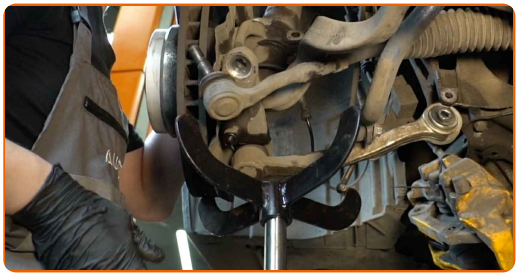
36 Remove the fastening bolt.



37 Release the lower fastener connecting the shock strut to the steering knuckle. Use a flat metal-working chisel. Use a hammer.



38 Lower the hydraulic transmission jack by 10-15 cm.



AUTODOC recommends:

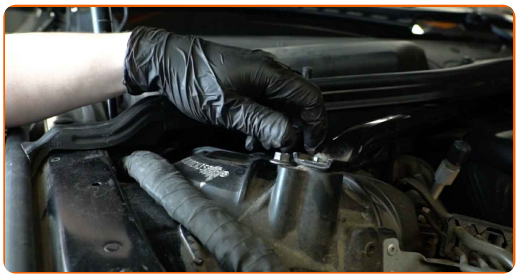
- BMW E60 – Do not lower the transmission jack sharply to avoid damaging components and mechanisms of the car.

39 Disconnect the steering knuckle from the shock absorber strut.

Replacement: suspension strut – BMW E60. AUTODOC experts recommend:

- Make sure that the steering knuckle is supported.

40 Unscrew the top fastening of the shock strut mount.



Replacement: suspension strut – BMW E60. Tip:

- To avoid injuries, hold the shock strut when undoing the fastening bolts.

41 Remove the suspension strut.

42 Set the shock absorber strut on the spring compressor tool.

Replacement: suspension strut – BMW E60. Tip from AUTODOC experts:

- Note that when using a spring compressor, spring coils need to be securely gripped, compressing the spring on the opposite sides.
- Ensure the correct position of the spring in the retainer.
- Make sure that the spring coils tightly entered the lock handles.

43 Compress the spring.

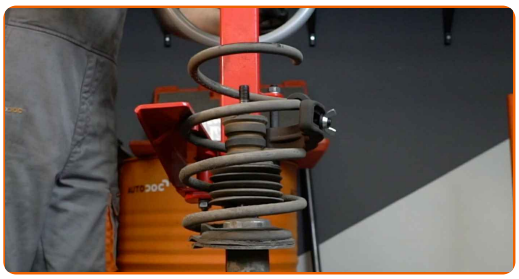
44 Remove the shock strut mount cap. Use a crowbar.

45 Treat the shock strut rod. Use a wire brush. Use WD-40 spray.

46 Remove the strut piston rod nut. Use a drive socket #21. Use HEX No.H7. Use a ratchet wrench.

47 Remove the top strut mount.

48 Release the coil spring.



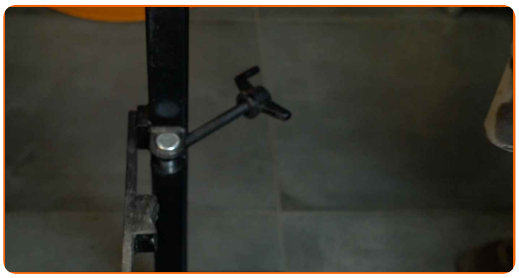
49 Remove the spring.

50 Remove the shock absorber dust cap and the bump stop.

AUTODOC recommends:

- Replacement: suspension strut – BMW E60. Carefully inspect the mount, the boot, and the bump stop of the shock absorber. Replace if necessary.

51 Remove the old shock absorber from the hydraulic coil spring compressor.

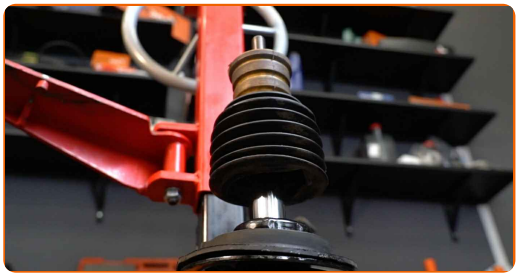


Replacement: suspension strut – BMW E60. Tip from AUTODOC:

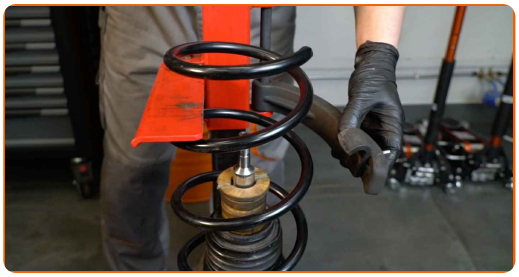
- Before installing a new shock absorber you should pump it manually 3-5 times.

52 Install the new shock absorber on the hydraulic coil spring compressor.

53 Install the dust sleeve and the bump stop on the new shock absorber.



54 Install the spring on the shock absorber.



55 Compress the spring.

56 Install the upper strut mount and the strut mount bearing.

57 Tighten the shock strut piston rod nut. Use a drive socket #22. Use HEX No.H6. Use a torque wrench. Tighten it to 64 Nm torque.

Replacement: suspension strut – BMW E60. AUTODOC recommends:

- Check to make sure the spring is positioned correctly. Avoid its misalignment.

58 Treat the shock strut rod. Use copper grease.

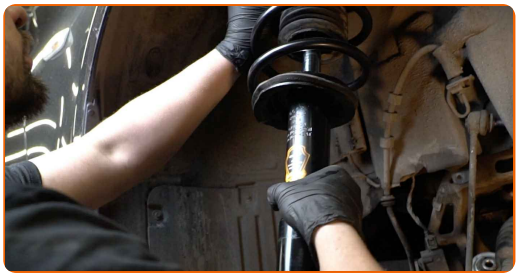
59 Install the shock strut mount cap.

60 Decompress the spring.

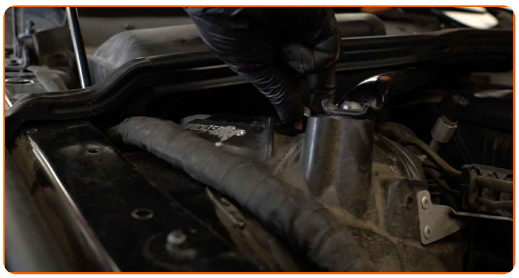
61 Remove the assembled shock strut.

62 Treat the shock strut mounting seat on the steering knuckle. Use a wire brush. Use WD-40 spray.

63 Install the shock strut into the wheel arch.



64 Screw the top fastening of the shock strut mount. Do not tighten it.

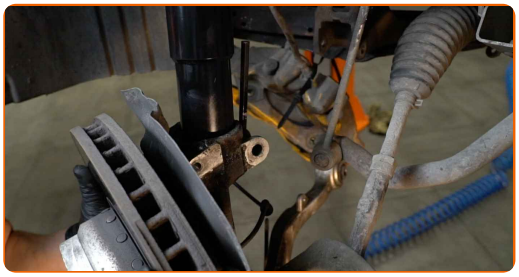


Replacement: suspension strut – BMW E60. AUTODOC experts recommend:

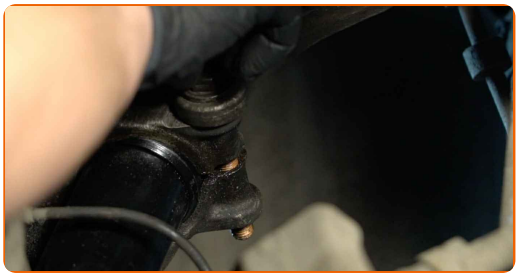
- To avoid injuries, hold the shock strut when screwing the fastening bolts in.

65 Treat the shock strut mounting seat on the steering knuckle. Use a wire brush. Use WD-40 spray.

66 Fix the shock absorber strut on the steering knuckle.

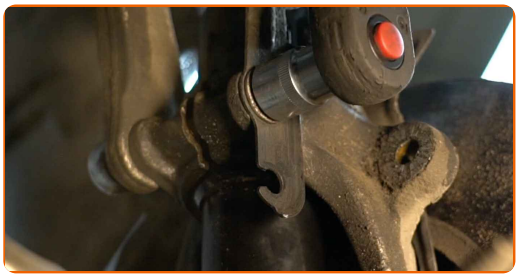


67 Install the fastening bolt.



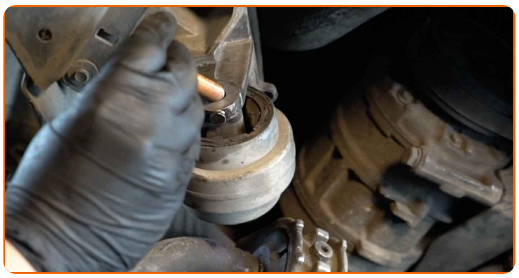
68 Screw in the fastener of the stabiliser link bracket. Use a drive socket #16. Use a ratchet wrench.

69 Screw in the fastener that connects the shock strut to the steering knuckle. Use a drive socket #18. Use a ratchet wrench.

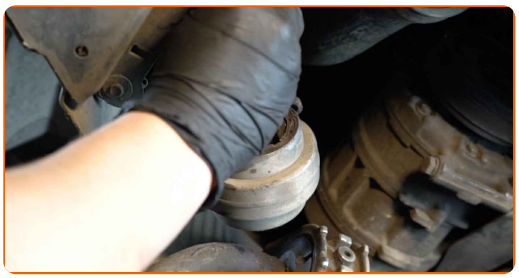


70 Clean the mounting seats and the thread of the suspension arm. Use a wire brush. Use WD-40 spray.

71 Reinstall the control arm.

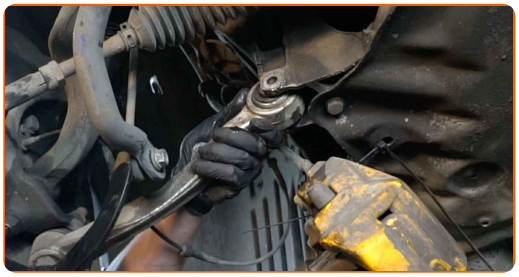


72 Install the front fastener of the arm.

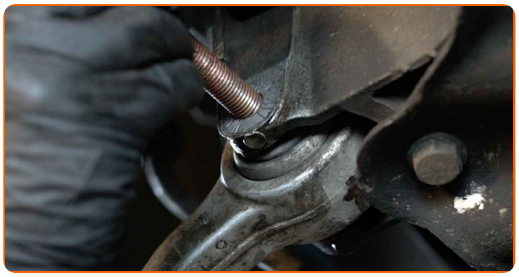


73 Screw the front arm fastener. Use a combination spanner #18. Use a drive socket #18. Use a ratchet wrench.

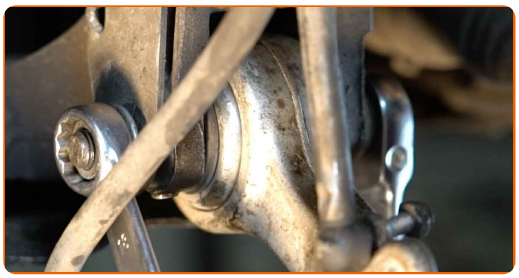
74 Reinstall the control arm.



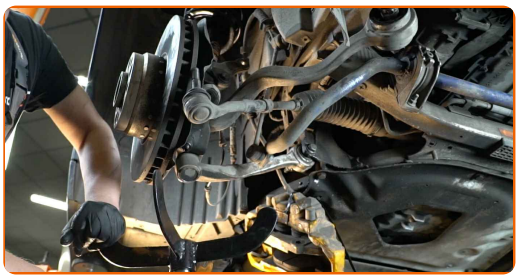
75 Install the rear fastener of the arm.



76 Screw the rear fastener connecting the control arm to the subframe. Use a combination spanner #18 (2 pieces).



77 Remove the support from under the steering knuckle.



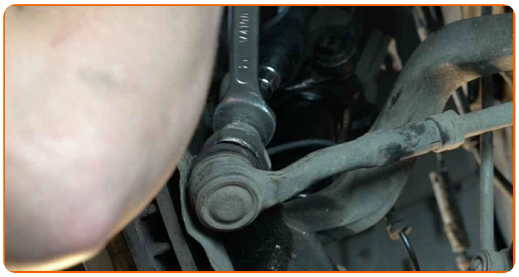
AUTODOC recommends:

- Replacement: suspension strut – BMW E60. Lower the transmission jack smoothly, without jerks, to avoid damaging components and mechanisms.

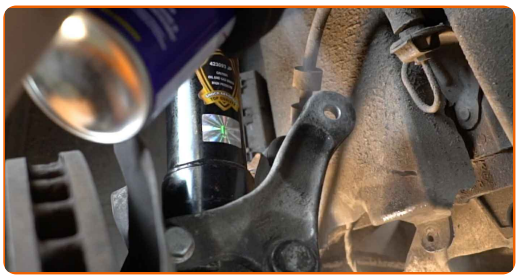
78 Clean the mounting seats of the tie rod end. Use a wire brush. Use WD-40 spray.

79 Connect the tie rod end to the steering knuckle.

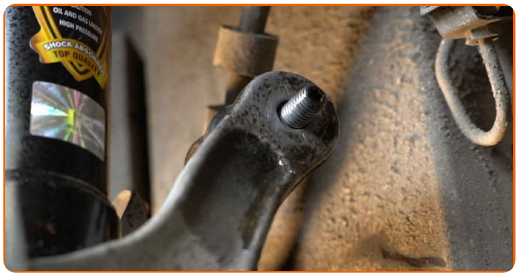
80 Screw on the fastening nut that connects the tie rod end to the steering knuckle. Use a combination spanner #21. Use Torx T40. Use a ratchet wrench.



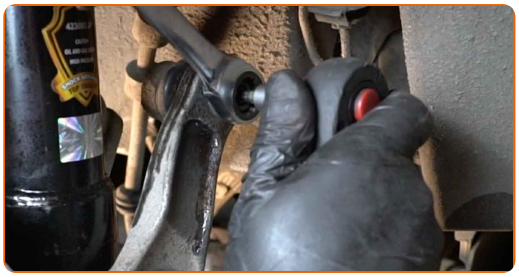
81 Clean the mounting seats of the stabiliser link. Use a wire brush. Use WD-40 spray.



82 Install the transverse stabilizer link.

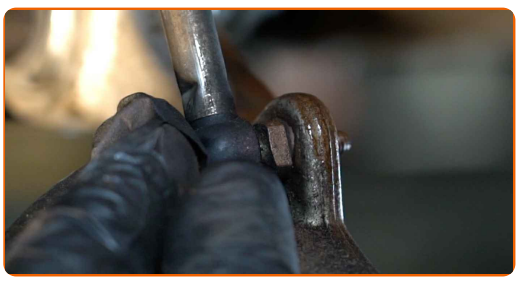


83 Tighten the stabiliser link fastener. Use a combination spanner #16. Use Torx T30. Use a ratchet wrench.

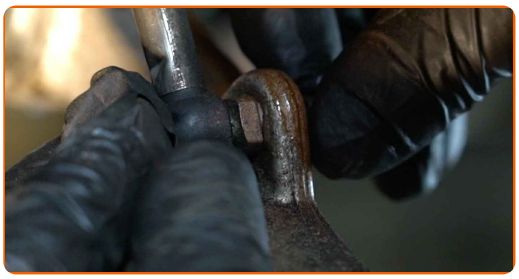


84 Connect the ABS sensor wiring.

85 Reconnect the headlight levelling sensor.



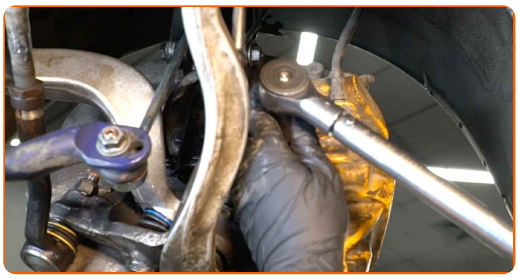
86 Screw in the fasteners of the headlight levelling sensor. Use a combination spanner #10.



87 Clean the mounting seats of the caliper and its bracket. Use a wire brush. Use WD-40 spray.

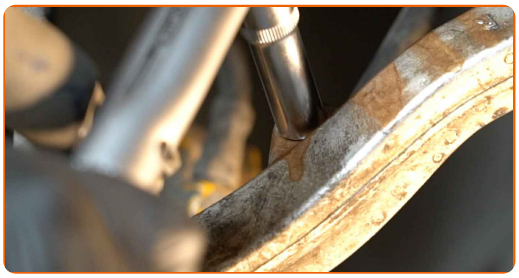
88 Install the brake caliper together with its bracket.

89 Tighten the brake caliper bracket. Use a drive socket #18. Use a torque wrench. Tighten it to 110 Nm torque.

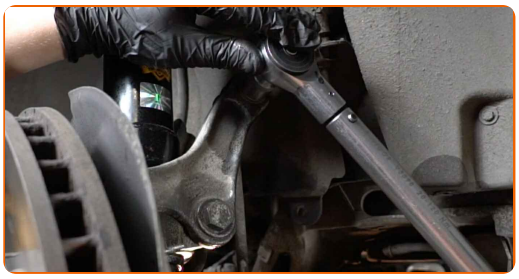


90 Fasten the brake hose on the strut.

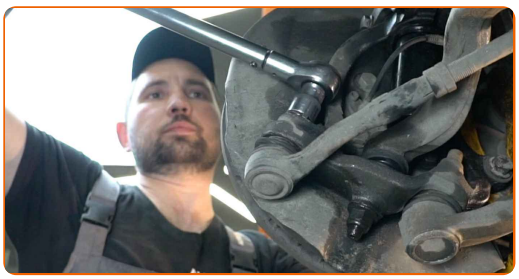
91 Tighten the fasteners of the headlight levelling sensor. Use a drive socket #10. Use a torque wrench. Tighten it to 7 Nm torque.



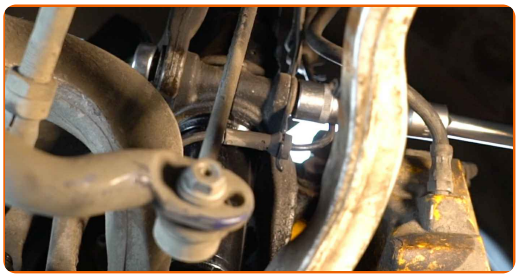
92 Tighten the fastener connecting the stabilizer link to the shock strut. Use a drive socket #16. Use a torque wrench. Tighten it to 65 Nm torque.



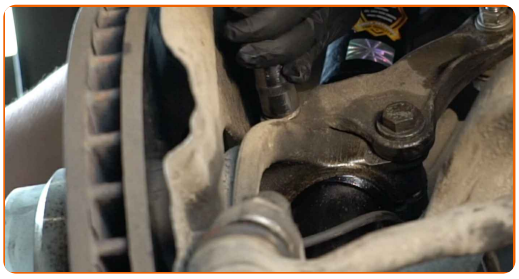
93 Tighten the fastening nut connecting the tie rod end to the steering knuckle. Use a drive socket #21. Use a torque wrench. Tighten it to 165 nm torque.



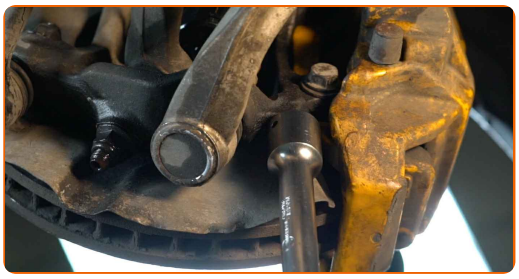
94 Tighten the lower fasteners connecting the shock strut to the steering knuckle. Use a drive socket #18. Use a torque wrench. Tighten it to 81 Nm torque.



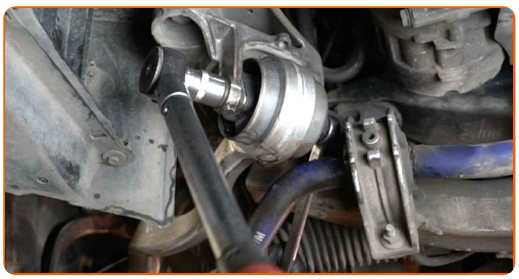
95 Tighten the fastener of the stabiliser link bracket. Use a drive socket #16. Use a torque wrench. Tighten it to 65 Nm torque.



96 Prop up the steering knuckle. Use a hydraulic transmission jack.



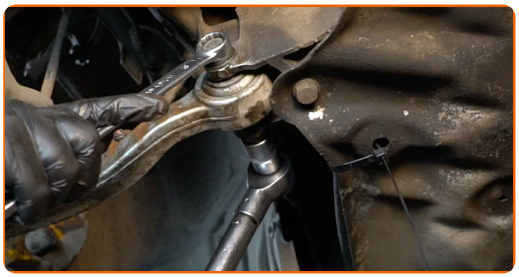
97 Tighten the front fastener connecting the control arm to the subframe. Use a combination spanner #18. Use a drive socket #18. Use a torque wrench. Tighten it to 100 Nm torque.+90°



AUTODOC recommends:

- Important! Be sure to use new fasteners.

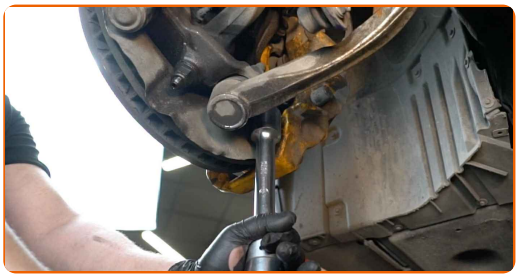
98 Tighten the rear fastener connecting the arm to the body subframe. Use a combination spanner #18. Use a drive socket #18. Use a torque wrench. Tighten it to 100 Nm torque.+90°



AUTODOC recommends:

- Important! Be sure to use new fasteners.

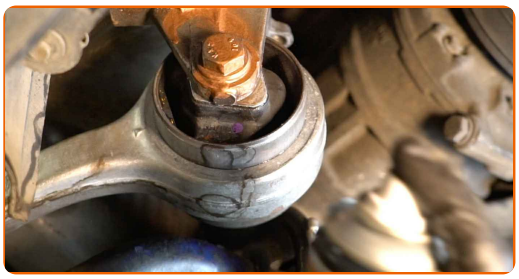
99 Remove the support from under the steering knuckle.



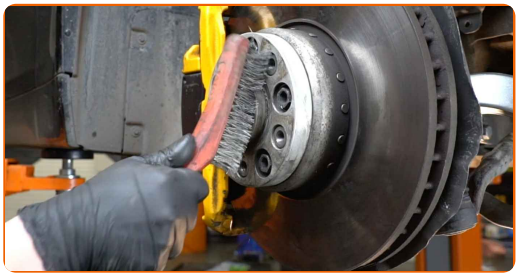
Replacement: suspension strut – BMW E60. Professionals recommend:

- Lower the hydraulic transmission jack smoothly, without jerks, to avoid damaging assemblies and mechanisms.

100 Treat all joints of the arm. Treat the shock strut fasteners. Use copper grease.



101 Clean the wheel rim mounting seat. Use a wire brush.



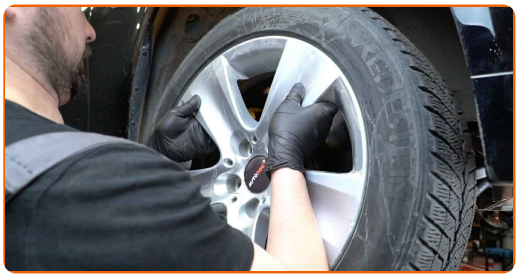
102 Treat the surface where the brake disc contacts the wheel rim. Use copper grease.

103 Clean the brake disk surface. Use a brake cleaner.

AUTODOC recommends:

- Replacement: suspension strut – BMW E60. After applying the spray, wait a few minutes.

104 Install the wheel.

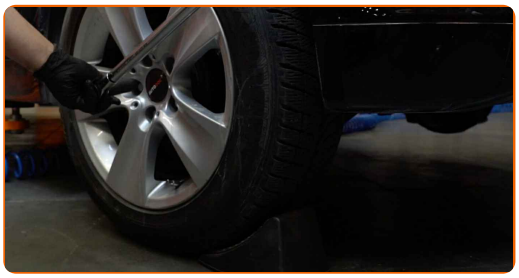


Replacement: suspension strut – BMW E60. AUTODOC recommends:

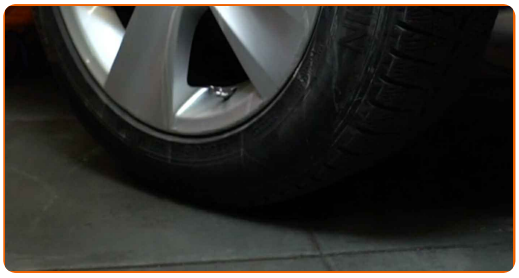
- To avoid injury, hold up the wheel when screwing in the fastening bolts.

105 Screw in the wheel bolts. Use wheel impact socket #17.

106 Lower the car and working in a cross order, tighten the wheel bolts. Use wheel impact socket #17. Use a torque wrench. Tighten it to 120 Nm torque.



107 Remove the jacks and chocks.



108 Tighten the upper fastener of the shock absorber strut mount. Use a drive socket #13. Use a torque wrench. Tighten it to 34 Nm torque.

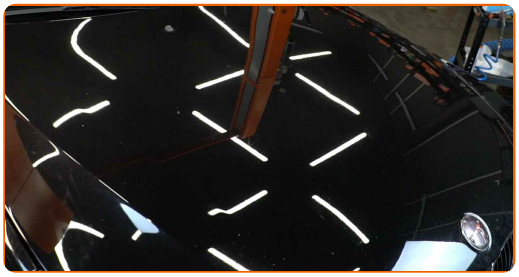
109 Treat the fasteners of the shock strut mount. Use copper grease.

110 Install the protective cap onto the shock absorber strut mount.

111 Screw in the fasteners of the suspension strut mount cover. Use a Phillips screwdriver.

112 Remove the fender protection cover.

113 Close the hood.



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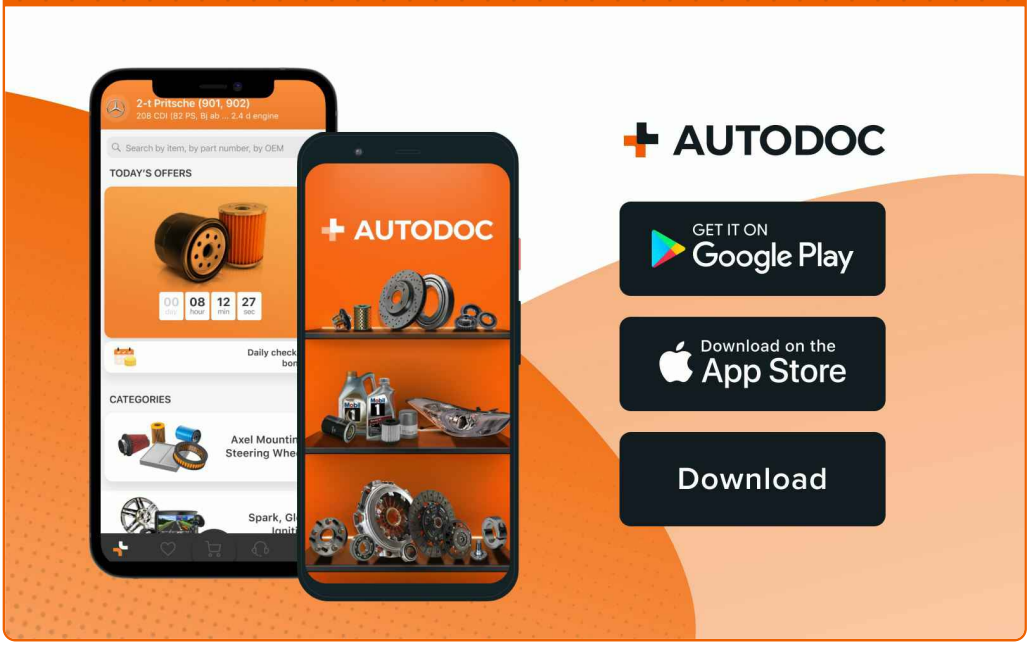

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